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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,023	05/20/2004	Takashi Nakano	2004-0770A	7039

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EXAMINER	
LEE, GILBERT Y	

ART UNIT	PAPER NUMBER
3673	

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07/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/849,023	NAKANO ET AL.	
	Examiner	Art Unit	
	Gilbert Y. Lee	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6,8 and 10-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6,8 and 10-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/2/07 has been entered.

Claim Objections

2. Claims 10 and 11 are objected to because of the following informalities: all dependent claims must start with --The--. Appropriate correction is required.

3. Claim 15 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 14. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 6, 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Mech (Fr. 2,650,048).

Regarding claim 6, the Mech reference discloses a shaft seal mechanism (Fig. 5) forming a leaf seal (e.g. 4) in an annular space (Fig. 5) between a rotor (1) and a stator (2), comprising:

a plurality of thin plates (4) lapped on one another in layers in a circumferential direction of the rotor and arranged in the annular space between the rotor and the stator so as to form a thin plate assembly of an annular shape (Fig. 4); and

a pair of flexible thin plate retaining rings (e.g. 5a and 5b) between which an outer circumferential proximal end side of each of said thin plates is pinched so as to be retained by said retaining rings (Fig. 5);

wherein said outer circumferential proximal end side of each of said thin plates is supported on a stator side (Fig. 5) and an inner circumferential distal end side of each of said thin plates is non-fixed to an outer circumferential surface of said rotor so that said thin plate assembly of annular shaped divides the annular space into a higher pressure side area (e.g. P1) and a lower pressure side area (e.g. P2);

further comprising a deviation preventing member (12) arranged between said outer circumferential proximal end side of said thin plates (Fig. 5) and said thin plate

retaining rings so as to regulate motion of each of said thin plates relative to said thin plate retaining rings (e.g. regulation will be provided by plate 12 and the recesses that plate 12 is in because of the gaps above and below); and

wherein said pair of thin plate retaining rings each have an approximate C-shape (Fig. 5) as seen in a cross-section taken along an axis of rotation and together form concave portions (e.g. concave portions of elements 5a and 5b holding elements 4 and 12) in which said outer circumferential proximal end side of each of said thin plates and said deviation preventing member are fitted so that said thin plate assembly is pressed on its outer circumferential side (Fig. 5).

MPEP 2113 Product-by-Process Claims states that "If the product in the product-by-process claim is that same as or obvious from a product of the prior art, claim 10 is unpatentable even though the prior art product was made by a different process." The process by which the thin plates are fixed to each other is not a patentable distinction. The Mech reference also discloses the thin plates being bent along a circumferential plane of said annular space (Figs. 7 and 8).

Regarding claim 11, the Mech reference discloses each of said thin plates having a length with an outer circumferential proximal end side at one end and an inner circumferential distal end side at an opposite end (Fig. 5), a width extending in an axial direction of said rotor (Fig. 5), and a thickness, wherein each of said thin plates is wider than it is thick at said inner circumferential distal end side (Fig. 4);

wherein said plurality of thin plates are lapped in the circumferential direction of the rotor to form the thin plate assembly so that said thin plates overlap each other in their thickness direction (Fig. 5).

Regarding claim 12, the Mech reference discloses the thing plates having a length, width and thickness (Fig. 4), wherein each said width extends in an axial direction of the rotor (Fig. 5), and each said thickness extends in a direction in which said thin plates are lapped (Fig. 4), said width being greater than said thickness (Fig. 4).

Regarding claim 13, the Mech reference discloses the deviation preventing member being elastically deformable to generate an activating force (Fig. 5). Note that the deviation preventing member of the Mech reference is **capable of** being elastically deformed because of the recess above the middle portion of the plate 12. If enough force is applied to the plate, then the ends of the plate will engage with elements 5a and 5b and cause the middle to deviate higher than the sides of the plate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urlichs (US Pub. No. 2003/0071423 A1) in view of Flower (US Patent No. 5,474,305).

Regarding claim 1, the Urlichs reference discloses a shaft seal mechanism (Fig. 1) forming a leaf seal (e.g. 9) in an annular space (Fig. 1) between a rotor (2) and a stator (Fig. 1), comprising:

a plurality of thin plates (9) lapped on one another in layers in a circumferential direction of the rotor and arranged in the annular space between the rotor and the stator so as to form a thin plate assembly of an annular shape (e.g. Fig. 8); and

a thin plate retaining ring (e.g. 1 in Fig. 6G) between which an outer circumferential proximal end side of each of said thin plates is pinched so as to be retained by said retaining ring (Fig. 6G);

wherein said outer circumferential proximal end side of each of said thin plates is supported on a stator side (Fig. 6G) and an inner circumferential distal end side of each of said thin plates is non-fixed to an outer circumferential surface of said rotor so that said thin plate assembly of annular shaped divides the annular space into a higher pressure side area (e.g. P1) and a lower pressure side area (e.g. area opposite of P1 in Fig. 6G);

further comprising a deviation preventing member (e.g. 25) arranged between said outer circumferential proximal end side of said thin plates (Fig. 6G) and said thin plate retaining rings so as to regulate motion of each of said thin plates relative to said thin plate retaining rings (Para. [0054]); and

wherein said thin plate retaining ring forms concave portions (e.g. concave portions of elements 1 holding element 9 in Fig. 6G) in which said outer circumferential proximal end side of each of said thin plates and said deviation preventing member are

fitted so that said thin plate assembly is pressed on its outer circumferential side (Fig. 6G).

However, the Urlichs reference fails to explicitly disclose a pair of retaining rings having a C-shaped cross section.

The Flower reference, a sealing device, discloses making the retaining ring of either one member or two members (e.g. Figs. 4 and 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to split the retaining ring of the Urlichs reference into two retaining rings in view of the Flower reference in order to provide easier access to the sealing plates for installation/removal/disassembly.

Regarding claim 13, the Urlichs reference, as modified in claim 6, discloses the deviation preventing member being elastically deformable to generate an activating force (Urlichs, Para. [0054]).

Regarding claims 14 and 15, the Urlichs reference, as modified in claim 6, discloses a spring (e.g. Urlichs 25) urging said thin plates relative to said thing plate retaining rings such that rattling movement of said thin plates relative to said thin plate retaining rings is prevented (Urlichs, Para. [0054]).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mech.

Regarding claim 8, the Mech reference disclose the invention substantially as claimed in claim 6.

However, the Mech reference fails to explicitly disclose the plates having a side surface having a recess and the plate retaining rings having a stepped portion engageable with said recess.

Fig. 2 of the Mech reference discloses the addition of a recess in the plates and a stepped portion on the plate retaining rings engaging the recess.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the thin plates with a recess and the plate retaining rings having a stepped portion engaging the recess to Fig. 5 of the Mech reference in order to provide more security for the thin plates.

Response to Arguments

7. Applicant's arguments filed 7/2/07 have been fully considered but they are not persuasive.

With regards to the applicant's arguments of the rejection of claim 6, the arguments are not persuasive because the claim only requires a deviation preventing member that regulates motion of each thin plate. Because there exists gaps above and below element 12 of the Mech reference, element 12 will restrict the movement of the thin plates. The applicant also argues that the Mech reference does not disclose an **approximate** C-shape; however, Fig. 5 of the Mech reference clearly discloses that each ring has an **approximate** C-shape.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gilbert Y. Lee whose telephone number is 571-272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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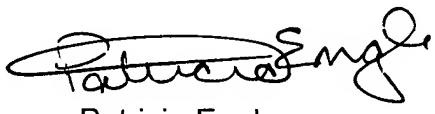
July 6, 2007



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